

with what is dead and corrupt; what is ennobling with what is contemptible. Yet if a comparison were possible it is the humanities which include the dead languages and literature and the history of dead institutions, whilst the sciences bring us directly into contact with present realities. Nevertheless, it is the former which take precedence in our public schools and our older seats of learning and command the highest marks in Civil Service examinations, whilst chemistry and the other sciences are tolerated though not encouraged, and are valued by the Civil Service commissioners at less than one-third that of the classics and one-quarter that of pure and applied mathematics.

The conclusions are obvious. Our highly-educated Government officials and princes of industry are more or less ignorant of science. It is for many of them an unknown and mysterious region into which they would prefer not to penetrate. That Nemesis now confronts our industries may be a blessing in disguise. It is only in a struggle that the weak points in one's armour are disclosed. We are learning a lesson, which might have been learnt years ago had we not been so inexorably bound by tradition, and the sooner we profit by it the better.

METEOROLOGY AND THE WAR.

IN an article which occupies a prominent position in *Le Petit Journal* of February 9, l'Abbé Moreux, the director of Bourges Observatory, emphasises the importance which Germany attaches to meteorological observations and forecasts in connection with the war on land, on sea, and in the air. The fact is scarcely surprising when it is remembered that the great damage done sixty years ago on November 14, 1854, to the allied fleets in the Black Sea by a storm, the course of which could be followed across Europe, was the factor which led Leverrier to conceive and inaugurate the service of international meteorological telegrams. Meteorology is essentially so co-operative and peaceful a science that its stormy birth is apt to be forgotten.

According to M. Moreux, Germany transferred meteorologists from Aix-la-Chapelle to Liège and then to Brussels almost simultaneously with the entry of her army into these cities; and when she found the Aix-la-Chapelle staff not sufficiently expert for her needs she brought up more competent authorities from Berlin and reinforced them with astronomers whose special duty was to watch sounding balloons. The evidence on this point does not appear, however, to be very conclusive and from the marvellous successes in the prophetic sphere which have been attributed to the German representatives in Belgium it would appear probable that the race of Galeotti, and not that of Galileo, has been invited to render assistance.

Meteorology, along with other departments of science, is bound to have important bearings on the present war. It is, perhaps, more closely

associated with the actual active operations than many other departments of science; but its application is not likely to be rendered more successful by substituting for men who are intimately acquainted with the subject men who have achieved distinction in quite a different field; nor by moving the experts from the central institution to the local field of operations. Progress in forecasting in recent years has been achieved by extending the area from which observations are received by telegraph rather than by special observations at a single place; and the meteorological expert's work is to co-ordinate the results of other people's observations, mainly by charting them, rather than to make the observations or to apply the deductions based upon them.

It may be added that in normal times Hamburg is the official centre of the German system of weather-telegraphy and forecasting.

NOTES.

WE announce with much regret the death on Monday, March 1, at seventy-five years of age, of Prof. James Geikie, F.R.S., emeritus professor of geology and mineralogy in the University of Edinburgh.

THE King of the Belgians, and Admiral Lord Fisher of Kilverstone, First Sea Lord of the Admiralty, have been elected honorary members of the Institution of Civil Engineers.

A BRONZE statue of Captain R. F. Scott, erected at Portsmouth Dockyard by the subscriptions of naval officers and officials of the Dockyard, was unveiled on February 26 by Admiral Sir Hedworth Meux, the Commander-in-Chief at Portsmouth. The monument is the work of Lady Scott, and shows Captain Scott in his Antarctic dress.

THE following candidates have been selected by the Council of the Royal Society to be recommended for election into the Society:—Prof. F. W. Andrewes, Prof. A. W. Conway, Mr. L. Doncaster, Mr. J. Evershed, Dr. W. M. Fletcher, Prof. A. G. Green, Mr. H. H. Hayden, Dr. J. Mackenzie, Prof. J. C. McLennan, Dr. A. T. Masterman, Prof. G. T. Morgan, Dr. C. S. Myers, Mr. G. C. Simpson, Mr. A. A. Campbell Swinton, Mr. A. G. Tansley.

WE regret to see the announcement of the death, in his fifty-seventh year, of Mr. Frank T. Bullen, whose knowledge of the sea and its natural history made him distinguished among writers of sea stories. Mr. Bullen was a junior clerk in the Meteorological Office for several years previous to 1899, and while occupying that post he contributed to *NATURE* of June 4, 1896, a very interesting article on "The Sperm Whale and its Food." This was before he had attained fame by his book, "The Cruise of the Cachalot," but we were impressed at the time by the clear and attractive style of the article, and were glad to know that later Mr. Bullen's real literary gifts received general recognition.

SIR CHARLES A. PARSONS has made a gift of 5000*l.* to the Royal Institution. The following resolution

passed by the managers was approved by the members on March 1:—"That the managers of the Royal Institution desire to express to the Hon. Sir Charles A. Parsons, K.C.B., F.R.S., who has unconditionally placed at their disposal, for the purposes of the institution, the sum of 5000*l.*, their most grateful appreciation of his munificence and discernment. They accept the gift as a timely and noble recognition of the good public work the institution has done in the past, and is still doing, in the acquisition and diffusion of scientific knowledge, and as an incitement to maintain and extend its usefulness in the unique position which it has for more than a century occupied."

NEWS received from the Russian Arctic voyager Vilkitski now definitely locates him in Taimyr Bay, to the west of Cape Chelyuskin. A wireless message from him has been picked up by Captain Sverdrup, who is laid up further to the south-west on the same inhospitable coast. Vilkitski, having set out in July from Vladivostok to make the passage to European Russia, has thus accomplished about three-fifths of the voyage along the Russian arctic coast. He proposes to send some of his men to Sverdrup, thus relieving the pressure upon his supplies, for he has encountered such heavy ice conditions hitherto that it does not seem certain that he will be able to get on with his ships next summer. The expedition has ample opportunity to add to geographical knowledge (as it has done already) on the coast where it is now imprisoned.

THE appeal for subscriptions to the Sir William White Memorial Fund has resulted in a sum of 3076*l.* 14*s.* 6*d.*, contributed by 455 subscribers. The committee of the fund has decided that the most suitable form which the memorial could take would be the establishment of a research scholarship in naval architecture to be named after Sir William White; and it has been arranged to hand over to the council of the Institution of Naval Architects the greater part of the funds subscribed so that a sum of at least 100*l.* a year shall be available for the scholarship, which will be administered by the council of that institution. In addition, a medallion portrait will be placed in the new building of the Institution of Civil Engineers; and, finally, at the suggestion of Lady White, a donation of one hundred guineas has been made to the Westminster Hospital, where Sir William White passed away.

A REVISED memorandum on cerebro-spinal meningitis, or "spotted fever," has been issued by the Local Government Board in view of cases of the disease which have occurred in various parts of the country. It is issued as a purely precautionary measure, and is intended to indicate to medical practitioners, especially village doctors, that the department is watching the outbreak, and that should suspicious cases occur, free bacteriological examination and isolation accommodation will at once be provided. Suspicious cases should be isolated immediately, and any contact cases closely watched. A warning is issued against overcrowding, and as the germs are first located at the back of the throat any person even slightly suspected

of having contracted the disease should refrain from kissing anyone else. So far as the general public is concerned, the outbreak may be regarded with indifference. In London it is stated that not more than twenty cases of the disease have been recognised during the last two months.

WE have recorded already the sudden death, on February 13, of Prof. Wesley Mills, emeritus professor of physiology, McGill University, Montreal. From an obituary notice in the issue of the *British Medical Journal* of February 27 we learn that Prof. Mills took the degree of M.D. in McGill University in 1878. He was for several years demonstrator of physiology with Sir William Osler, and studied at University College with Sir J. Burden-Sanderson and Sir E. A. Schäfer. In 1884 he became lecturer in physiology, and in 1886 professor of the subject at McGill University. He organised the teaching of physiology on modern lines, and was the first Canadian teacher of the subject to have a thoroughly up-to-date, well-equipped laboratory. Among his early contributions to physiology were the studies of cardiac innervation. He became much interested in comparative physiology, and the results of a long series of studies are embodied in a work on "The Nature and Development of Animal Intelligence." In 1889 appeared his "Text-book of Animal Physiology," which was modified in the new edition of 1890 to the "Text-book of Comparative Physiology." In 1906 appeared his "Voice Production in Singing and Speaking," a work which brought him much reputation outside of medical circles. After a serious illness in 1910 he retired, and lived in London, devoting himself with energy and enthusiasm to the study of music.

THE Royal Swedish Academy of Science, Stockholm, has recently erected a monument in the Swedish cemetery at Brookwood, Woking, to the memory of Daniel Solander, F.R.S. The memorial consists of an obelisk of unhewn Swedish stone, with the inscription of the name, and dates of birth and death, and that the memorial was erected by the Academy. Daniel Solander was the son of a clergyman in Pite Lappmark, was born in 1733, entered the University of Uppsala as a student in 1750, and left his native country ten years later for London. Here he became employed in the British Museum, in 1764 was elected a Fellow of the Royal Society, and in 1767 made the acquaintance of Banks, who induced Solander to travel with him in that eventful voyage in the *Endeavour* which was Cook's first expedition to the southern seas. On returning from this voyage in 1771, Solander was adopted by Banks as his secretary and librarian, until his death in 1782 from an apoplectic seizure, in the presence of Sir Charles Blagden and the younger Linnaeus, dying ten days later. There exist several portraits of Solander; one, a full-length engraving depicting him as "a Simpling Salamander," another of head and bust to left; and, by far the best, a full-length portrait in oil, by John Zoffany, which belongs to the Linnean Society, and was copied for Sir Joseph Hooker's edition of Banks's *Journal*, published in 1896.

THE death is announced, on February 20, of Dr. Ed. C. Seaton, consulting medical officer of health to the Surrey County Council. We are indebted to the *British Medical Journal* for the following particulars of his life and work. He studied medicine at St. Thomas's Hospital, and took the degree of M.D. at the University of London in 1871. From 1886 to 1908 he was lecturer on public health at St. Thomas's Hospital, and was at different times examiner in State medicine in the Universities of London, Oxford, and Cambridge, and at the Royal Colleges of Physicians and Surgeons of London. He was the author of the article on vaccination in Quain's "Dictionary of Medicine." He delivered the address in public medicine at the annual meeting of the British Medical Association in 1891, taking as his subject the evolution of sanitary administration in England. He read a communication on diphtheria before the International Congress of Medicine at Budapest in 1894, and delivered the Milroy Lectures at the Royal College of Physicians in 1896. His Chadwick Lectures at the University of London on "Infectious Diseases and their Preventive Treatment," published in 1910, may be taken as containing a summary of his matured views on subjects to the study of which he had given his professional life. Dr. Seaton took an active part in promoting legislation for the compulsory notification of infectious diseases, and was the author of numerous reports and papers on the subject. He was a Fellow of the Royal Sanitary Institute and a member of the Society of Public Analysts. For more than forty years he was a member of the British Medical Association.

SHORTLY after the commencement of the war, the British Science Guild referred to two of its committees the question of the supply of laboratory and optical glasses, most of which had been obtained from Germany and Austria. The reports of these committees have now been completed, and will be issued shortly. The Institute of Chemistry took up the subject about the same time, and appointed a Glass Research Committee, the main purpose of which was to determine, by experiment, the constitution of glasses suitable for various purposes and to communicate the formulæ to manufacturers. The research has been carried on at King's College, London, and formulæ have been arrived at for an aluminasoda glass suitable for the manufacture of chemical laboratory ware and for a glass which is a satisfactory substitute for Jena glass in respect of its resistance to water and reagents. Provided with these and other formulæ, the only question left for manufacturers contemplating the laying down of plant for the production of laboratory glass to consider was the prospect of the industry after the war. In order to obtain information upon this point, the British Science Guild, acting jointly with the Association of Public School Science Masters, sent a circular letter to local education committees throughout England, councils of universities and technical institutions, and governors of the chief secondary schools, including all the public schools represented on the Headmasters' Conference. The result of the inquiry has been most satisfactory.

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In general it may be said that about three-quarters of the bodies concerned have undertaken to use British-made laboratory glass during the war, and for a period of three years after, provided that the price is not prohibitive. Two scientific organisations, on their own initiative and without any assistance, financial or otherwise, from the Government, have thus been able to do most valuable work for British glass manufacture. It is to be hoped that official recognition will be given to the service they have rendered to national welfare.

THE question of the origin of culture, through direct transmission by migration or trade from a single centre, or by independent evolution in more than one area, is in the air at present. A useful contribution to the controversy is provided by Mr. Eldson Best in the January issue of *Man*. One of the most beautiful of the several types of greenstone pendants made by the Neolithic Maori is that called the Tautau. The existence of this type has been, at various times, advanced as proof of American and Asiatic relationships in Maori art, and Mr. Hamilton, the best authority on the subject, states that this form is as yet unexplained. Mr. Best now brings forward evidence to show that this type is indigenous and not genetically related to objects of similar shape found in other parts of the world. He traces its origin to a form of fish-hook consisting of a bone barb, sometimes beautifully carved, fitted into a hole which passes through the lower end of a straight wooden shaft. A series of illustrations indicates the phases through which the ornament was gradually developed from this form of fish-hook.

MR. A. S. F. Gow contributes to the *Journal of Hellenic Studies*, vol. xxxiv., part 2, a valuable paper on the evolution of the plough of Greek and Roman days. It starts with those ploughs in which the main timbers are of one piece. Then follows the plough which has stock and pole in one piece, but the tail inserted artificially. The next step in complexity is when all the three main members are separate timbers artificially joined. Fourthly, comes the variety in which pole and tail rise together from the hinder part of the stock, stock and pole have lost the exaggerated solidity seen in the earlier examples, and the pole, not the stock, is now the most important member in the implement. The accounts of the plough in Virgil and Hesiod are carefully discussed, with other classical references, and the paper is illustrated with a good series of photographs from the monuments and of modern Greek and Italian ploughs. The writer does not seem to be acquainted with the important article by Sir E. Tylor, "On the Origin of the Plough and Wheel-Carriage," in vol. x. of the *Journal of the Anthropological Institute* (1881).

We have received from Mr. E. J. Brill, of Leyden, a catalogue of books and pamphlets dealing with the geology, botany, zoology, etc., of the Dutch East Indies, together with others relating to tropical diseases and medicine and climatology.

At the monthly general meeting of the Zoological Society, held on February 17, it was stated in the

report of the council that thirty additions had been made to the menagerie during January, of which twenty-two were acquired by presentation, one by purchase, and two by exchange, while three were received on deposit, and two were born in the gardens. Amongst these was a sing-sing waterbuck, a squirrel-monkey, a kinkajou, two Senegal genets, and a spotted fire-finch (*Lagonosticta niveiguttata*), the last a species new to the collection.

IN the reports on the Hunterian Collections in the University of Glasgow for 1913-14 it is stated that, in addition to a considerable number previously identified, many type-specimens of insects described by Fabricius have been recognised recently, as well as a number of the specimens figured in Drury's "Illustrations of Natural History," and Olivier's "Entomologie," 1789-1808. These the curator hopes may eventually be housed in a fireproof building. All the collections are reported to be in good condition; and in some instances have received considerable augmentation during the period under review.

NEXT time the editor of *My Children's Magazine* requires a picture of a whale he would be well advised to send his artist to the Natural History Museum instead of allowing him to evolve from his own mind the grotesque caricature of a sperm-whale (with upper teeth!) which forms the frontispiece to the March issue of that journal. The picture is intended to represent a whale stranded at Greenwich in the time of John Evelyn, by whom it was seen and measured. There is no proof that this was a sperm-whale, and it was much more probably a common porpoise (as is suggested by Evelyn's mention of a "picked snout"), a species of which, a female, was stranded some twenty years ago at Woolwich, where it gave birth to a couple of young. Another error in the same issue is the statement that the wool used in the manufacture of "cashmere" is the product of *wild* goats.

MR. C. F. JURITZ contributes a paper on plant poisons of South African plants in vol. xi., No. 4, of the *South African Journal of Science*, which is of value in pointing out the pharmacological possibilities of the rich native flora. Interesting particulars are given of the toxic properties of the fruits of the Cycad, *Encephalartos*, various Liliaceæ, and Amaryllidaceæ, which are so numerous at the Cape, and of many other plants under their respective natural orders.

THE pocket-book for 1915 issued by the Royal Botanic Society of London is a mine of miscellaneous and very useful information, giving not only the various horticultural fixtures for the year, but also such things as the different weights and measures and their conversion from one system to another, physical constants, chemical constituents of gems, the composition of soils, manures and their uses for different kinds of trees and plants, and so on. Several pages are devoted to lists of economic plants with their botanical names, natural orders, and uses, which form a very handy source of reference. At the end there is a plan of a tennis-court and croquet-lawn, but the Badminton court, which might have found a place, is not included.

JAPANESE primulas form the subject of an illustrated article by Mr. Takeda in No. xxxviii., vol. viii., of Notes from the Royal Botanic Garden, Edinburgh. Though China is the home *par excellence* of the genus, Japan, according to the present paper, possesses eleven native species. Of these *P. Sieboldii* and *P. japonica* are the best known. Hybridisation, which is uncommon, as a rule, in the genus, is common among the Japanese species, and *P. Sieboldii* is conspicuous as a parent of many hybrids. In the same number of the Notes fifty new Chinese plants are described, collected by G. Forrest or F. K. Ward in West China at altitudes of from 12,000 to 16,000 ft. *Draba alpina*, var. *involutocrata*, from the Lichiang range at 15,000 to 16,000 ft., has been grown at the Edinburgh Botanic Garden. Other high-altitude plants are the gentians and saxifrages collected by F. K. Ward on the borders of Yunnan and Tibet up to 16,000 ft.

THE Hawaiian Volcano Research Association is a society founded in 1909 and supported by voluntary contributions. Its objects are to record volcanic outbursts and earthquakes in the Hawaiian Islands, and to offer opportunities to scientific men to pursue special studies in connection with volcanic action. The association possesses a volcano observatory near the edge of the crater of Kilauea, and a seismological station at a short distance which is furnished with two Bosch-Omori tromometers, an Omori tromometer, and an Omori seismograph. Weekly bulletins are issued in which the continual changes within the craters are described and lists are given of the numerous earthquakes recorded. An appeal for funds has recently been issued by the board of directors, partly for scientific objects, partly for the construction of stone refuge houses along the north-east rift line of Mauna Loa, as it is almost certain that an outflow of lava will shortly take place along that line.

ATTENTION has been directed on more than one occasion in these columns to the need of journals publishing summaries of current mathematical work in the form of lists of new books and of the contents of periodicals. This has been a feature of the Bulletin of the Calcutta Mathematical Society, which, however, has up till now reached us considerably out of date. The Tôhoku Mathematical Journal (vol. vi.), published in Sendai, Japan, now publishes these lists, and although some of the printed matter is scarcely likely to be intelligible to the majority of English readers, the titles of many papers are at any rate printed in the language of publication, and the references are to recent work.

IN his "Notes on Some Focometric Apparatus" in the December, 1914, number of the Journal of the Royal Microscopical Society, Mr. F. J. Cheshire states that he has found the following modification of Blakesley's arrangement for determining the focal length of a short-focus system by the method of magnification, most convenient for the ordinary requirements of the microscopist. An achromatic system of focal length 2.6 cm. is mounted in the middle of a tube having a millimetre scale at its lower and a slit

a millimetre wide at its upper end, the slit and scale being at the foci of the system. The tube is fitted under the stage of a microscope with the slit in the plane of the stage. The eyepiece of the microscope is provided with a graduated scale, and on focussing the lower scale, the number of eyepiece divisions corresponding to a lower scale divisions is read. The system the focal length of which is to be determined is then introduced between the objective and the slit, the microscope again focussed, and the number of eyepiece divisions covered by a division of the lower scale again read. The quotient of the two readings gives the focal length of the system. By a proper choice of scales the focal length may obviously be read at one operation in any desired unit.

THE Bureau of Standards, Washington, U.S.A., has issued a circular (No. 51) describing the method adopted for testing watches and timepieces, and detailing the conditions under which the bureau is prepared to issue certificates showing the quality of the performance. The tests naturally do not differ greatly from those that experience has proved to be practical and satisfactory in other observatories and institutions, where regular tests are carried on. An omission of some importance, as it seems to us, is the failure to mention the connection between this testing department and any observatory of repute. No information is provided as to the manner in which the time determinations are made, or how the errors of the mean time clock are eliminated. The bureau may be in connection with the U.S. Naval Observatory at Washington, and the authorities in charge of that observatory may be responsible for the accuracy of the time record. More distinctness on this head would have been welcome, as in the last report from the Naval Observatory it was stated that an insufficient number of chronometers and watches were submitted for trial, and that every effort was being made to induce makers to submit instruments for test. Some useful information is provided concerning the care and treatment of accurate time-keepers, and a table is given showing the main centres on railways, etc., where the change of time is made in passing critical meridians. Where so many abrupt changes occur between the Atlantic and Pacific coasts, this table should prove valuable.

In No. 1, vol. iv., of the Memoirs of the Department of Agriculture in India, Harrison and Subramania continue the account of their work on the gases of swamp rice soils. In the first paper on this subject it was suggested that the gases formed in the soil had an important connection with the aeration of the roots of the crop. This theory is now elaborated, and a detailed investigation is made of the mechanism by which the organised film, in contact with the surface of these swamp soils, utilises the soil gases for the production of oxygen. It is shown by experiment that the film can oxidise both methane and hydrogen, and, further, that the resulting carbon dioxide is decomposed, with evolution of oxygen, by the green algæ and diatoms which are always present in the film. Crude cultures of bacteria have been prepared capable of bringing about the first of these changes, but no

specific organism was isolated having the power to oxidise either methane or hydrogen in pure culture. A mixed culture of two organisms, however, is stated to oxidise hydrogen to water in the presence of very small amounts of nitrogenous organic matter. The film may be looked upon as fulfilling the duty of an oxygen concentrator at a point which enables the maximum oxygen concentration to be produced in the water entering the soil. The practice of green manuring increases the production of soil gases, which is otherwise comparatively small, leading to an increased oxygen output by the surface film and better root aeration. Hence there is deeper root development resulting in sturdier and more productive plants. A further paper dealing mainly with the bacteriological side of the investigation is to be published shortly.

THE Isthmian Canal Commissioners decided some time ago that the requirements of the Panama Canal necessitated the provision of two large floating cranes capable of handling such heavy loads as the largest lock- and dock-gate leaves. Tenders were asked for two floating cranes, each of 250 tons capacity, and the contract was awarded to the Deutsche Maschinen Fabrik A.-G., of Duisburg, because "the proposal of the German firm was so much lower in price than any other, and the experience, facilities, and reputation of this firm so excellent, that it was unquestionably the best of those received." The quotation is from the official records, and *Engineering* for February 26 aptly puts the question as to whether this opinion is still held in view of what happened to the first of the cranes when undergoing its test loading. The load was not quite out to the specified distance when the jib collapsed. Our contemporary publishes photographs of the crane after the accident, from which it appears that the jib was insufficiently braced, and that the accident might have been avoided by the presence of a few additional members. The damage is estimated at about 120,000 dollars, and the work will take about six months to put right.

THE *Engineer* for February 26 gives an illustrated description of an enormous locomotive built for the Erie Railroad by the Baldwin Locomotive Works of Philadelphia. The engine is of the 2-8-8-2 type in wheel arrangement, and has six cylinders; two of the cylinders are high-pressure, and each of these exhausts into two low-pressure cylinders. All the cylinders are of the same size, viz., 36 in. diameter and 32 in. stroke. The wheel base is 90 ft. in length, and 89 per cent. of the weight of the engine and tender is carried on the driving wheels. The boiler is 8 ft. diameter at the smoke-box and 9 ft. diameter at the dome. A Schmidt superheater having 1584 sq. ft. of surface is fitted, and is said to be the largest yet made for a locomotive. The total weight of the engine and tender is 380 tons (long). The engine will do duty as a banking engine on a long gradient of 1 in 95, where at present the standard goods train, hauled by a 2-8-0 engine, requires two 2-8-0 engines and a Mallet engine as combined banking engines. The new engine will do the work of the three present engines on the bank. It will be coupled into the middle of the train, thus reducing the stresses on the couplings and drawbars

and avoiding any tendency to buckle the train in the middle due to excessive pushing forces in the rear.

THE forthcoming books of Messrs. John Wiley and Sons, Inc. (New York), include:—Elementary Chemical Microscopy, E. M. Chamot; The Examination of Hydrocarbon Oils and of Saponifiable Fats, D. Holde, translated by E. Mueller; Text-Book of Geology, L. V. Pirsson and C. Schuchert; A Meteorological Treatise on the Circulation and Radiation in the Atmospheres of the Earth and of the Sun, F. H. Bigelow; Manual for Health Officers, J. S. MacNutt; Constant-Voltage Transmission, H. B. Dwight; Field Book of Railroad Engineering, W. G. Raymond; Materials of Construction: their Manufacture, Properties and Uses, A. P. Mills; Steam Power, C. F. Hirshfeld and T. C. Ulbricht; The Railroad Taper: the Theory and Application of a Compound Transition Curve based upon 30-foot Chords, L. Perkins; Working Data for Irrigation Engineers, E. A. Moritz; A Shop Mathematics for Machinists, R. W. Burnham; Interpolated Six-Place Tables, H. W. Marsh; Masonry, M. A. Howe; Plain and Reinforced Concrete Arches, J. Melan, translated by D. B. Steinman.

OUR ASTRONOMICAL COLUMN.

THE RETURN OF METCALF'S COMET?—In NATURE of February 25 reference was made to a telegram received by Prof. Strömgren relative to the discovery of an object by Miss Leavitt believed to be Metcalf's comet. The *Morning Post* of February 23 published the following paragraph relative to this discovery: "A telegram from Prof. Pickering has just been received stating that the object reported as Comet Metcalf turns out to be a minor planet. This must be a disappointment to Miss Leavitt, but it accounts for the failure of astronomers to find the comet when better placed. The question of priority of discovery, as evidenced by the Southern comet of last year, which was discovered independently at Johannesburg, Arequipa, and Christchurch, New Zealand, on the very same day, has been already responsible for premature publication. Prof. Pickering is, however, generally prepared to take the risk and is sometimes fully justified."

THE CANADIAN 72-INCH REFLECTING TELESCOPE.—Dr. J. S. Plaskett communicates some very satisfactory information about the large Canadian mirror which is in process of being worked up. (*Journal of the Royal Astronomical Society of Canada*, Nov.-Dec., 1914.) The mirror is actually $73\frac{5}{8}$ inches in diameter and $13\frac{5}{8}$ inches thick, weighing 4962 pounds, or a little more than two tons. An excellent idea of the size of this vast piece of glass will be gathered from the illustration accompanying Dr. Plaskett's note, showing the disc with Dr. John Brashear sitting beside it. Already the edge has been ground, the labour occupying three weeks, and the more delicate and dangerous work of drilling the central hole has been satisfactorily completed. The latter involved first boring a hole of 9 inches diameter, then enlarging it to 10 inches, and finally smoothing and squaring it up and bevelling off the top edge. The next procedure is the figuring of the upper and lower surfaces to make each plane in order to choose which surface is the more suitable for shaping into parabolic form. It is satisfactory to read that "the more the disc is examined the better it seems to be, and hopes are high that it will prove a great success."

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ANOMALOUS DISPERSION IN THE SUN.—No. 93 of the Contributions from the Mount Wilson Observatory contains a communication from Mr. Charles E. St. John, entitled "Anomalous Dispersion in the Sun in the Light of Observations." Mr. St. John first directs attention to recent publications by Prof. Julius, who has considered the displacements of the Fraunhofer lines at the centre and limb edges of eccentrically located sun-spots from the point of view of his theory of anomalous dispersion. In these Prof. Julius has set forth "a new deduction from the theory of anomalous dispersion—the 'mutual influence' of the Fraunhofer lines upon each other; in particular, that a weak line on the violet side of, and near to, a stronger line is displaced less, but if on the red side more, than the average amount." The above deduction affords Mr. St. John, as he says, an opportunity of making a quantitative test of the rôle played by anomalous dispersion in the solar atmosphere, and this he does in the present paper. It may be remarked that Prof. Julius used the data published by Mr. St. John in his paper, "Radial Motion in Sun-spots." In the present discussion, which covers more than forty pages, it is impossible to refer even briefly to any of the details here stated. Mr. St. John sums up in eleven paragraphs the results of his investigation, and the reader must refer to the article itself for further information. The general result may, however, be expressed by reproducing the last paragraph of the summary. "The general conclusion from this review of solar observations is that the deductions from the anomalous dispersion theory which are susceptible of definite and quantitative tests are not supported by the observational data, and that observations are outstanding which have not yet been explained by the theory."

GREAT DETONATING FIREBALL IN SOUTH AFRICA.—Some of the South African newspapers just received give particulars of a fireball which appeared nearly over Cradock and Queenstown on January 9 last at 1.20 a.m. It vividly illuminated the heavens for several seconds, and was followed shortly after by a series of loud explosions.

The meteor evidently came from the N.N.W., passing between Cradock and Queenstown, and finally disappearing to the S.E. of the former place at a distance of about 24 miles, but the exact figures are doubtful. The estimated interval between the flash and the detonation was variously given by different persons at Cradock between 30 seconds and 3 minutes. The meteor may have fallen to the earth in the region S.E. of Cradock, and it is to be hoped that a thorough search has been instituted for the object. Its flight appears to have been directed from the position of the radiant of the January meteoric shower from Quadrans, the maximum display from which is usually developed on January 3. But the shower is certainly prolonged until January 9. The meteor, however, more probably owed its origin to a radiant in the constellation Draco.

The recent meteor startled a large number of persons by its loud detonation. Houses are said to have been shaken, and the visitation was ascribed by many people to an earthquake. The real path cannot be satisfactorily computed from the observations, which are not of a suitably exact character. The period from January 9 to 14 is notably rich in fireballs, and it merits further investigation. There are evidently a number of radiant points active at this epoch, and among those best pronounced will be found positions at $120^{\circ}+0^{\circ}$, $148^{\circ}-12^{\circ}$, $230^{\circ}+52^{\circ}$, and $332^{\circ}+36^{\circ}$.